Barriers to computerization
of management systems - Myths or reality?

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Abstract. The work presents the most common barriers limiting the process of computerization of management systems, including – especially – e-administration systems. Frequently published views do differ and the listed barriers are indeed vanishing. The authors are trying to determine whether the common views are still valid or whether they remain a myth.

The process of computerization in Poland has been developing in many walks of life as well as social activity and business. It is understandable – we are a part of European Union together with countries that – alongside The United States of America and Japan – have the most significant input into making the idea of e-society a reality. The undertaken significant economical, creative effort and research, though, has not resulted in the otherwise anticipated success. The fact that IT projects score low in social awareness is being propelled by means of spectacular designs, the results of which can hardly be counted as success, e.g. Pesel, ZUS, Poltax and CEPiK. In the face of quite poor coverage, still, of basic and useful IT knowledge among the Polish society contributing to the lack of understanding and open-mindedness, it could be treated as a natural tendency towards down scoring, but this 'internal' assessing is also 'supported' by the low ranking of Polish IT projects on the international arena. In the World Economic Forum[1] the advancement of Poland on the road to eSociety scored as low as second but last place among the European Union countries (65 in global scale), and this ranking (The Networked Readiness Index 2009-2010) is not to be stated biased. What causes it? What contributes to this situation?

The above questions have even more substance as some areas of social life and business can be observed in Poland as an extremely varied phenomenon. Many European and world class experts view the computerization of Polish banking as one of the best, or even world-best. This is also being proved by everyday results of effec-

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[1] after [3]

tive banking used by so many, and yet not understood by the majority, who know very little about this, apart from the fact that, simply, the systems are indeed working effectively. Where then, does this extreme contrast in results of the IT systems at work come from, whilst social, economical and organisational input in the implementation of new, and the development of existing IT systems in various areas of society and business – sizing the scale of the projects – can be underlined as comparable to the input of banking? Well, the computerization of a company or corporation, or, strictly speaking – its management systems is not in itself an undertaking that differs from a computerization of a public institution. At a similar scale of inputs with regards to a comparable operational range, the computerization of banking or a large manufacturing company should be relatively effective and functional, and consequently, economically fruitful. But it is not! Why?

The problem can be observed on all levels of management, including the highest legislative and executive bodies. Yes, in the last decade there have been a few new government-driven propositions called IT Strategies and Plans of Poland. It was initiated by the government that in the current year an act was passed by the parliament of Poland. This act was intended to eliminate everything that would stand in the way of the increase of pace and effectiveness of IT undertakings – Minimizing Citizens and Entrepreneurs' Information Technology Barriers Act, 25 March 2011. It is reasonable to conclude, then, that – at least administration-wise, staying within legally-defined boundaries, and having successfully eliminated barriers, finally, not only was every obstacle to reasonable and effective action noticed, it was identified. But was it really? Even a brief overview of the act stirs emotion and propels serious doubt, but not due to the contents of its rational articles! To consider those, deep insight into legal matter regulated by astounding 92 acts, as many as that due to the one quoted with its endless amendments! Cross references of acts being altered is very broad here: from Administrative Code of Conduct to aviation law and The Highway Code, from Commercial Code of Conduct, through customs and tax law to hunting law, Plant Protection and Gambling Acts, etc. Is 'fixing' a multitude of essentially different legal acts with a single one feasible? Does the new act bring hope, then, that a substantial improvement can be expected in the near future?

It should be concluded that the legislative body have accepted a somewhat correct assumption, that among many barriers to the computerization of management systems in Poland ones arising from limitations and lacking legal support are the most important. It is difficult, however, to be convinced that this assumption is a result of a thorough analysis of the current matters and the scientific view on this matter. It is true that many authors promote such a theory supporting it with many reasonable and convincing arguments. Although the legal-administrative constitute just a fragment of what in reality – despite the constant growth of inputs – intimidates the growth IT the most. To illustrate, let us present the most common ones, order of which subject to their authors' views and preferences:

1   Lack of one, unanimous definition of computerization on a national scale – including the vision of the country's role fulfilled in this process, and what it includes – general goals, specific goals of the individual governmental institutions and the preferred ways of achieving them (proce-

dures). Fundamentally this means computerization system inconsistency, which activity is incidental or casual above that;

2   Lack of unanimous, rational and widely accepted IT projects results assessment criteria, in the light of which it would be possible to employ any optimization and to gauge compatibility of the results and goals. Lack of such criteria also halts the actual prioritizing of steps for optimal effectiveness (regardless of how its measured);

3   Unfavorable administration system (not only national!) with highly advanced department autonomy and organizational hierarchy, where functional borders of the administrative bodies are described as insufficiently precise;

4   Lack of coordination and incorrect assignment of constituting and managerial competence, especially with regards to such important functional elements of eAdministration as eSignature and associated standards, implementation and utilization costs, as well as lack of professional centre of an informative and advisory nature;

5   Very limited IT knowledge of the decision makers, especially with regards to IT systems technological powers and how it affects the organization and institution activity;

6   The absence of professional IT Technicians in the administration, especially those, who have been appropriately prepared to facilitate eAdministration. This area is especially lacking - on one hand – the readiness of administrative systems to accept such specialists (e.g. payment barriers), on the other – lack of specialized options at the Polish universities;

7   Immaturity, inconsistency, ancient approach to law at different levels of social life and its implementation with disastrous effects. For example: administrative legislation, forcing a practice tailored to hierarchy-subject and over-formalized structure of a departmental institution, clearly steering clear off the goals and needs of individual and institutional suppliants, or the right to public orders, which, in practice, often remain directly in conflict with rationally described goals;

8   Mental barrier of the institution client (suppliants) that shows in strong preference of traditional, 'paper' documents over eDocuments and sorting issues 'directly' in an office or institution preferred over eContact;

9   Still-existing barrier of no Internet access, real especially in rural, poorly-urbanized territories and peripheries. This barrier also means establishing the first, even the basic contact of the citizen with an institution remains an illusion;

10   Discrepancies between competence of the administrative institutions with regards to finances and formulating of tasks as well as implementing IT projects.

It is difficult to expand on all flagged problems in just one humble work. It does seem, though, that some of them could be accepted without objections as proven in real life. Some others might bring doubt, considering

for example a document entitled, *E-Society in Poland up to Year 2013*[2] – *Development Strategy.* Recently published data compares eAdministration in European Union Countries eGov Benchmark 2010[3] with data contained in a report by Local MP and Administration eSociety in a work entitled, *E- Society in Numbers 2010,* published in 2011.

Poland in 2010 – according to 'eGov Benchmark 2010' has reached a comparably good level of accomplished eSociety goals moving it from place 25 in 2009 to 19 out of 32 countries surveyed. The seven problem's areas were being examined:

- Access to services (20 basic services listed),
- Advancement the services
- Experience of the user
- E-Orders
- Business user support
- Strengthening the citizen as a user
- Perspective IT solutions

This report states that in all the countries of European Economic Area the foundation for building public eAdministration is already in place. To assess the **accessibility of the services,** a criterion of connection accessibility has been used. Poland was holding the 19th place and was slightly below the European average (79% and 82% respectively). It is important to highlight that all of the subjected eServices are available only in six countries – Denmark, Ireland, Malta, Portugal, Sweden and in Italy. It is only slightly better in France (85% - 18th place) than in Poland. Of course, just stating accessibility does not determine the quality of available services. Even just the access to information alone is a beginning only and automation and customization need to follow. It is refreshing to see, though, the growth of eServices accessibility in Poland, the growth of which has multiplied by eight since 2004.

Considering the **level of advancement of services,** the criterion of services offered was accepted, according to a 5-level 'maturity model', which included: information, one-way interaction, two-way interaction, transaction and specialization of services. Poland had scored 87% and landed in the 20th position, only slightly below the European average (90%). The first place in this category was taken by Austria (100%). Business services (90%) were more advanced than public ones (85%).

In the category of **user experience** with regards to services, five criteria were accepted:

- Transparency of service delivery is assessed on the basis of tracking down the finalising stage of the service and the ability to estimate the time for completion;

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[2] Document prepared by the MSWiA and published in 2008

[3] The annual survey conducted by a consortium of research and consulting firms such as Capgemini, IDC, Rand Europe, Sogeti and the DTI on behalf of DG Information Society European Commission - one of the flagship public sector efficiency studies; study in 2010 was developed in cooperation with representatives of the European Economic Area, and the results announced in February 2011, in a final report Fri "Digitizing Public Services in Europe: Putting Ambition into action 9th Benchmark Measurement".

- Multi-Channel service provision is assessed on the basis of information, whether the service can be obtained via different eChannels, other than website www (e.g. call center, e-mail);
- Privacy and data protection is assessed on the grounds of a direct accessibility from the website www information concerning user's data protection according to the legislation regarding the protection of privacy;
- Ease of use of services is assessed on the basis of information, whether there is appropriate user support (e.g. FAQ, demo, direct help, etc.) and whether it is possible to add applications, forms or necessary documents (attachments);
- User satisfaction monitoring (contentment) – on the basis of information, whether there is any possibility of checking the level of user satisfaction or an option of passing opinions/complaints, and the management of those, onto the supplier.

  In this assessment category the general mark for Poland was 91% against the European average of 79%. In the following sub-criteria Poland scored: transparency in the provision of services – 63% (EU 52%), multi-channel provision of services – 100% (EU 88%), data protection – 100% (EU 90%, the ease of the use of services – 56% (EU 80%), user satisfaction monitoring – 95% (EU 80 %). The national portal www.poland.gov.pl was rated in the following categories: usefulness, customization and 'one window' approach. The results – 80%, 100% and 78% respectively, display advantage over each European average - namely: 77%, 89% and 77% respectively, even last year was a lot worse.
- In the category of eOrders – 75% against 71% scored by EU (17th place);
- In the sub-category components of the process of eOrder: eNotification – 56% (EU 88%), eSubmission – 73% (EU 61%), eAwarding – 80% (EU 59%);
- In the sub-category of the indicator of the general process of eOrders preceding the final appointment of the executive – 67%, slightly lower, than EU average (72%).

  In the category of **business user support,** the activity, favorable market and so called good business practices are considered. For this purpose, the process of starting business is being analyzed and divided into 21 stages for research purposes. Only some EU countries provide online access to all stages. In Poland, only 20% of information is accessible this way, the rest, although available via internet portal, is only feasible in the traditional way, i.e. by submitting paper forms at offices.

  In the category of **business user support**, encouragement and promoting pro-active attitude and independent use of public administration services among the citizens is considered. Job loss and seeking was chosen as a standard process. Administrative procedures and eServices available to job seeking individuals were especially considered. 27 stages were identified, out of which 25 take place in Poland. Only 2 of those services are fully available online, but not at the designated job-seekers' portal. 6 out of 25 of those services are still being used in a traditional way. Unfortunately,

Poland scored very low in this category, as the real-life support available to a job-seeking individual was very low compared to EU countries.

On exploring the prospects of future eAdministration development, 'eGov Benchmark' highlighted those Horizontal Enablers, which constitute the basis for many service applications, and at the same time, for developing those services. A research was carried out in order to determine their occurrence, ways of monitoring and facilitating legal grounds. 9 Horizontal Enablers were being examined, which showed that in EU countries, on average, only 6 are available. In Poland there are only 3:

1. Single Sign-On
2. ePayment
3. Authentic Sources

The following were non-existent in Poland:

- eID
- eSafe
- Architecture Guidelines
- Catalogue of Horizontal Enablers
- Secure eDelivery

It is worth noticing that only six EU countries had all of the Horizontal Enablers on offer, four of the countries class as 'Old EU' (Germany, France, Austria and Denmark), and two - as new (Estonia and Hungary). It definitely does not make Poland proud, especially that during its presidency in Eger, Hungary, on June 22 this year it took over merely telecommunication and IT society duties. In the face of Poland's weighted responsibility in this regard, on Noveber 18-19 an MP conference in Poznan was called to address eAdministration.

'The strategy for IT development in Poland until year 2013' specifies 3 strategic directions of eSociety development for Poland spread over three conventional areas[4]:

1. HUMAN: accelerating of the development of the intellectual and social capital of Poles by means of IT and telecommunication;
2. ECONOMY: the increasing corporational effectiveness, innovation and competitiveness and the Polish economy on the global market as well as better communication and cooperation between companies by means of IT and communication;
3. STATE: The increase of availability and effectiveness of public administration services by means of IT and communication for restructuring internal administrative and services processes;

It is difficult to question the matter of the formulated strategies or regulations and eSociety development requirements accepted for Poland[5]. But how to transform these into realistic, equally identified, measurable goals? How to measure them in order to determine progress on all levels, and how to establish deadlines? What was

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[4] p. 11, op. cit.
[5] p. 9-10, op. cit.

presented as 'Strategy…'[6] is reasonable. In light of this document previously listed barriers no. 1 and 2 cannot be accepted as real – they are past. With regards to the first, it is notable, that assigning all tasks to public administration, or the state, was highlighted a strength in the 'eGov Benchmark 2010' report. Therefore, the role of the state, even if the absence of its precise definition is justified due to the complexity of tasks at different completion stages. With regards to the latter – accepting field-specific criteria and ways of measuring them in the European Union breathes air of optimism into the current state of poor control, monitoring of the progress of achieving goals and defining Poland's place in the Commonwealth and in the world, as well as the measuring of the economical effectiveness of its projects.

Barriers 3 and 4 seem reasonable. The common view that e.g. eSignature should become the responsibility of the IT MP, and not remain the responsibility of Ministry of Economy, is shared and justified by some specialists. The current way is not compatible with the range of eSignature use. Assigning computerization responsibilities to the departments of Administration, Internal Affairs and Finance along with the coordinating of the implementation seem to be the burning issues.

Barrier 5 is a stand-alone. Training specialists from a cross-section of fields to take over the role of expert decision makers is far from ideal. Especially poor is the knowledge of IT management systems. The reality does not usually hit the graduates until they start work in a company other than large and modern. Efforts to implement 'IT' at a current rate during the course of one's studies is a serious misunderstanding. The subject aims to equip the student with the basic computer skills, something long-covered by high school curriculum. Many universities recognize and try to address the problem. Insufficient range of educational offers seems to disable the progress onto extracurricular standards and higher education options. This is a similar problem to teaching foreign languages.

Barrier 6 is rather obvious, considering that Poland, according to various estimates, lacks several thousand, possibly up to 20000 professional IT Technicians. Not surprisingly, it is easier for an IT Technician of any sort to find a far better-paid position than admin. Only passionate, mission-driven individuals join and stay in administration. Just-above-the-national-minimum job devoid of room for promotion is hardly motivating. To this add the fact, that universities offering 'IT Management Systems' or similar, encourage their graduates to work in large, production, services or consulting corporations, where complex eManagement systems or their components are used, and education concentrates on this field. There is a burning problem of preparing and keeping competent employees in administration – not just IT Technicians. The seeking of such involves, among other issues, the idea of certifying IT Technicians as Administrators.

Barrier 7, according to 'Reducing Computerization Barriers to Citizens and Entrepreneurs Act, 25 March 2011', despite highlighted objections should be eliminated to a large extent. It is difficult to say when this would happen, if ever. It is certain, though, that issues regarding the abolition of legal restrictions will not immediately resolve all the problems. Introducing eSignature, for example, so called advanced, with fewer restrictions than a qualified signature and cheaper to produce

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[6] op. cit., p. 12-13 – targets in the area of MAN, p. 20 – targets in the area of ECONOMY, p. 24-25 – targets in the area of STATE;

could contribute to the widely-spread use. Cheap does not, however, automatically mean popular. Due to this, computerization, even in the formal-legal context must be examined as a complex: from eAdministration accessibility and the ease of use, through process optimizing, to availability (mainly costs) of tools, which remain too expensive at the moment.

Barrier 8 occurs across the board. Starting with the 40-year-olds generation, a large part of Polish society had not been given an opportunity to explore IT methods and tools. Lack of knowledge bears distrust, which contributes to the 'comfort zone' attitude – so well known to us. There has been an instance of this that occurred in the City Council of Siedlce. The council introduced eCirculation of documents. The council is also reducing the volume of paper used. Local people insist, however, on traditional methods of dealing with daily matters. At the moment it is possible to settle many matters without the need to visit offices in person, for this it is necessary to hold an eSignuture. The council could quickly, if this meets interest, multiply the number of services. Apart from the cost of eSignature, a habit of using traditional, signed and stamped documents still prevails.

Barrier 9 occurs in many Polish regions. Although Poland scores high in some criteria in European Union (e.g. nationwide network coverage, low percentage of citizens new to Internet, percentage of enterprises practising eAdministration), still, access to broadband in relation to eAdministration and modern economy, whether plug-in or wireless, is very limited and its development definitely too slow. Limitations to Internet access, and at the same time to eAdministration force the average of Polish eCompatible companies and the disables with Internet access to fall short of European numbers. The process of computerization of rural areas is too slow and significant numbers of people in the Polish community still occupy villages and towns. It seems that the correct prioritizing by local governments and the use of EU means to facilitate the development of infra-structure and eAdministration is the way forward.

Barrier 10 is largely connected to points 5 and 6. Likely, it would be easier to propose and implement changes in this regard, if administration institutions had stronger human resources with greater IT awareness.

It is easy to see that the above-presented information, data and views are not unanimous. A lot of them are 'common views' and stereotypes being circulated. Some are old and deep rooted and do not apply today. They have become a myth. The more so, care and moderation should be applied in publishing these. Free publishing of unverified information does puzzle. This only emphasizes the existing negative attitudes towards computerization generally on a social scale. It is definitely does not motivate individuals new to the problem, although they should take steps to learn more about it in their own interest. The introduction of European Digital Agenda is based on the 2015 time scale, a time in which all of EU should become a well-developed eSociety. This means building not only an appropriate infra-structure, achieving a high level of effective eAdministration, reaching a high level of eActivity but also strong engagement from those common inhabitants.

Resouces and references

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